



SEQUENCE LISTING

<110> YOSHIOKA, HIROFUMI

<120> GERM-RESPONSIVE PROMOTER

<130> 80169(302730)

<140> 10/537,094

<141> 2005-06-02

<150> JP 2002-351701

<151> 2002-12-03

<150> JP 2003-294409

<151> 2003-08-18

<160> 47

<170> PatentIn Ver. 3.3

<210> 1

<211> 2648

<212> DNA

<213> Solanum tuberosum

<220>

<221> modified_base

<222> (246)

<223> a, c, g, t, unknown or other

<220>

<221> modified_base

<222> (278)

<223> a, c, g, t, unknown or other

<400> 1

```
ctcttctgtt gatgtgctat agtcttttat atagcgtctt attcatgttg taatttggcc 60
tctactttta tttttttcaa cctaaaccaa cgtacaataa tgtgtaatga tactaatttg 120
actcacataa tagcatggtg ctagaagagt cacttgaaag agtatactga agagtattaa 180
aaatataatt ctaaagaatt tcgaagattc aattataatt gatcaagaag gtgataagag 240
ccttcnacia caacgtaaag tttgggtagc ctctatanat gactatgaaa atagccaaaa 300
aaaaattcaa attcgaattc ttgtaatcct tattttaggat tattgcgacc atcacttgtg 360
gggtgccttac ttgactaaat atttgattaa acattaattt ttgggtcagt gatatacatg 420
ccactcaatt ttaaataaat tagtgatccc ttacgatctt aaaaaaattg tatttttgtg 480
tgtaatgtca actttgggtc aaatgtctaa tataataagt attaattcca acagtattag 540
aattttatct ctaagatcac tcttacggtc ttaccactga aagattaaaa ttctaaccac 600
gaatttgaac tttaaatagt acttatgaat tttacttgcc gtttgaattt tatgtacatg 660
cttagaataa ttaggtcctc atgtagtcaa cttaaagaaa attacaatgt tacgttctaa 720
caagaacaaa tttgactcta gatttttaatt tttttttttt taaaaaaaaa ctaaataactc 780
atccgattca atttgtttga aactatgttc caattattaa tccgtttcaa aaacaatgtt 840
acattcagat atttaaaatc aattaaacta aatttctcat catcagtaag aagttttaat 900
aatcacatga aggaaagcct gtttggagaa agttatgcgt aaaatattgc atatatctct 960
tccattgaat tagttacatc tggatttgca taaaatcaac atttagtaaa atacgatggc 1020
ttagatgatt gaactttgaa caggaaaaat aagcgtgcaa ataagccatc aatcttgaac 1080
tttagaaata tatatatata attcaataag ttactttatt ggaatagcta tagtgacggc 1140
ggatttagaa ttttcattaa agggactcta aaaaaatata gtgcctaaga tttgaacttg 1200
aaactcaaga tgccactaaa caacctctaa tcttacattc agaaggttca aatcaatat 1260
```

atatagacat	aatttttttaa	attttttttta	acctccctcg	actacctcta	ggtcgcgcct	1320
tactattccc	atccgatctc	ttgggaagcg	ggggagaaaa	ttttataata	gtgcactcat	1380
gctataatta	catactaaga	ttttatgtaa	tgctatatatt	tttcaagttg	aagacggaaa	1440
caatagcatt	ggatcaagac	agacgccatt	gaaggaagaa	aaaacctaata	aaaataaaca	1500
aaaggagaga	cactttcttg	gtcccttcga	ggccatataat	cccattaata	taaaaatata	1560
aaacaaaaaa	aaagacagac	ggtcgcccac	ggaaagaagg	cggacgtcac	taacgggctaa	1620
ccctaactac	aaataatgta	attttccaaa	aacggaaacta	taaggaataa	aaaacatgaa	1680
gattattgag	tattattaat	ttttaaaaga	cagacgccac	tcgaggaaat	aaggaaatcac	1740
aaggagtaaa	gaaagaaatt	aaaggcacgt	tacagtatca	tataatataa	atttaagttt	1800
ggttgcattg	aagttatata	gtttttaaaa	aaaaataaaa	ttgtccaaca	atacttgtcc	1860
aatttagaaa	atctaaaaga	taattttatta	ttttgtgttt	gttttacctc	aacatctaata	1920
acattttctca	aattattaaa	tttaatatata	tcaaaaggta	atataagtaat	attactctta	1980
ttattttattt	attgtttctt	aagatttgtg	cagggtcaata	ataaataact	atcgttgaat	2040
taagggagta	ccatcaaaga	aattgattta	taacacgatg	cgggtggagg	gagctagaaa	2100
gttagtacia	atgttggtgc	actaagtact	tcacccgtct	caatttatga	gattttgttt	2160
gattcgagac	gaaatttaatt	aaagatgatt	tttttaaagt	tgtaattctaa	aacaagtcatt	2220
aaatattttgc	atcactataa	taatctcatt	aaatgtaaat	gaatattttt	agctaaatta	2280
ttactactcc	ctccatgtcc	atattagttg	atcatcttac	tatatattaa	ctgtccacct	2340
tactcaatta	ataaaatatt	aattaaagtt	ttctataact	agatataaaa	atgttattat	2400
tattttttgat	aaagactaga	aagagtatac	tattttgtata	tctacagtgg	gacgaccagt	2460
taagtatatt	gtagtcaaag	taaggcaacc	ggatggactg	catgcagcac	aaaggctctc	2520
accactataa	atactcaata	ttccttctct	ttcattttcca	tcaacacctt	caccaactaa	2580
caaattaaaa	gaaagaaaaa	aaaatctctc	agtttctcca	caagctaatt	agaccggttt	2640
ccgaagaa						2648

<210> 2

<211> 2000

<212> DNA

<213> Solanum tuberosum

<400> 2

tttatgtaca	tgcttagaat	aattaggtcc	tcattgtagtc	aactttaaga	aaattacaat	60
gttacgttct	aacaagaaca	aatttgactc	tagattttta	attttttttt	tttaaaaaaa	120
aactaaatac	tcacccgatt	caatttgatt	gaaactatgt	tccaattatt	aatccggttc	180
aaaaacaatg	ttacattcag	atatttaaaa	tcaattaaact	taaatttctc	atcatcagta	240
agaagtttta	ataatcacat	gaaggaaagc	ctgtttggag	aaagttatgc	gtaaaatatt	300
gcataatatc	cttccattga	attagttaca	tctggatttg	cataaaatca	acatttagta	360
aaatacgatg	gcttagatga	ttgaactttg	aacaggaaaa	ataagcgtgc	aaataagcca	420
tcaatcttga	acttttagaaa	tatatatata	taattcaata	agttacttta	ttggaatagc	480
tatagtgcag	gcggatttag	aattttcatt	aaagggactc	taaaaaaata	tagtgccata	540
gatttgaact	tgaaactcaa	gatgccacta	aacaacctct	aatcttacat	tcagaagggt	600
caaaatcaat	atatatagac	ataatttttt	aaattttttt	taacctccct	cgactacctc	660
taggtccgcc	cttactattc	ccatccgatc	tcttggaag	cgggggagaa	aattttataa	720
tagtgcactc	atgctataat	tacatactaa	gattttatgt	aatgctatat	tttttcaagt	780
tgaagacgga	aacaatagca	ttggatcaag	acagacgcca	ttgaaggaag	aaaaaaccta	840
aaaaaataaa	caaaaggaga	gacactttct	tggtcccttc	gaggccatat	atcccattaa	900
tataaaaaaa	taaaacaaaa	aaaaagacag	acggtcgccc	aaggaaagaa	ggcggacgtc	960
actaacggct	aaccttaact	acaaataatg	taattttcca	aaaacggaac	tataagggaat	1020
aaaaaacatg	aagattattg	agtattatta	atttttaaaa	gacagacgcc	actcgaggaa	1080
ataaggaatc	acaaggagta	aagaaagaaa	ttaaaggcac	gttacagtat	catataatat	1140
aaatttaagt	ttggttgcat	tgaagttata	tagtttttaa	aaaaaaataa	aattgtccaa	1200
caatacttgt	ccaatttaga	aaatctaaaa	gataatttat	tatttttgtgt	ttgttttacc	1260
tcaacatcta	atacatttct	caaattatta	aattttaaat	attcaaaagg	taatatagta	1320
atattactct	ttatttttat	ttattgtttc	ttaagatttg	tgcaggtaaa	taataaataa	1380
ctatcgttga	attaaggagg	taccatcaaa	gaaattgatt	tataaacaga	tgccgggtgga	1440
gggagctaga	aagtttagtac	aaatttggtt	gcactaagta	cttcatccgt	ctcaatttat	1500
gagattttgt	ttgattcgag	acgaaattta	ataaagatga	ttttttttaa	gttgtaattct	1560

```

aaaacaagtc ataaatattt gcatcactat aataatctca ttaaattgtaa atgaatattt 1620
ttagctaaat tattactact cctccatgt ccatattagt tgatcatctt actatatatt 1680
aactgtccac cttactcaat taataaaata ttaattaaag tttttctata ctagatataa 1740
aaatgttatt attatttttg ataaagacta gaaagagtat actatttgta tatctacagt 1800
gggacgacca gttaagtata ttgtagtcaa agtaaggcaa ccggatggac tgcattgcagc 1860
acaaaggctc tcaccactat aaatactcaa tattccttct ctttcatttc catcaacacc 1920
ttcaccaact aacaaattaa aagaaagaaa aaaaaatctc tcagtttctt cacaagctaa 1980
ttagaccgtt ttccgaagaa                                     2000

```

<210> 3

<211> 1500

<212> DNA

<213> Solanum tuberosum

<400> 3

```

aattttcatt aaagggactc taaaaaaata tagtgcctaa gatttgaact tgaaactcaa 60
gatgccacta aacaacctct aatcttacat tcagaagggt caaaatcaat atatatagac 120
ataatttttt aaattttttt taacctccct cgactacctc taggtccgcc cttactattc 180
ccatccgata tcttggaag cgggggagaa aattttataa tagtgcactc atgctataat 240
tacatactaa gattttatgt aatgctatat tttttcaagt tgaagacgga aacaatagca 300
ttggatcaag acagacgcc tgaaggaag aaaaaacct aaaaaataaa caaaaggaga 360
gacattttct tgggtccctc gaggccatat atcccattaa tataaaaaata taaaacaaaa 420
aaaaagacag acggtcgccc aaggaaagaa ggcggacgtc actaacggct aaccctaact 480
acaaataatg taattttcca aaaacggaac tataaggaat aaaaaacatg aagattattg 540
agtattatta atttttaaaa gacagacgcc actcgaggaa ataaggaatc acaaggagta 600
aagaaagaaa ttaaaggcac gttacagtat catataatat aaattttaagt ttggttgcat 660
tgaagttata tagtttttaa aaaaaaataa aattgtccaa caatacttgt ccaattttaga 720
aaatctaaaa gataatttat tattttgtgt ttgttttacc tcaacatcta atacatttct 780
caaattatta aatttaatat attcaaaagg taatatagta atattactct tattatttat 840
ttattgtttc ttaagatttg tgcagggtcaa taataaataa ctatcggtga attaaggag 900
taccatcaaa gaaattgatt tataacacga tgcgggtgga gggagctaga aagtttagtac 960
aaatttggtt gcactaagta cttcatccgt ctcaatttat gagattttgt ttgattcgag 1020
acgaaattta ataaagatga tttttttaa gttgtaatct aaaacaagtc ataaatattt 1080
gcatcactat aataatctca ttaaattgtaa atgaatattt ttagctaaat tattactact 1140
cctccatgt ccatattagt tgatcatctt actatatatt aactgtccac cttactcaat 1200
taataaaata ttaattaaag tttttctata ctagatataa aaatgttatt attatttttg 1260
ataaagacta gaaagagtat actatttgta tatctacagt gggacgacca gttaagtata 1320
ttgtagtcaa agtaaggcaa ccggatggac tgcattgcagc acaaaggctc tcaccactat 1380
aaatactcaa tattccttct ctttcatttc catcaacacc ttcaccaact aacaaattaa 1440
aagaaagaaa aaaaaatctc tcagtttctt cacaagctaa ttagaccgtt ttccgaagaa 1500

```

<210> 4

<211> 1000

<212> DNA

<213> Solanum tuberosum

<400> 4

```

aaaacggaac tataaggaat aaaaaacatg aagattattg agtattatta atttttaaaa 60
gacagacgcc actcgaggaa ataaggaatc acaaggagta aagaaagaaa ttaaaggcac 120
gttacagtat catataatat aaatttaagt ttggttgcat tgaagttata tagtttttaa 180
aaaaaaataa aattgtccaa caatacttgt ccaattttaga aaatctaaaa gataatttat 240
tattttgtgt ttgttttacc tcaacatcta atacatttct caaattatta aatttaatat 300
attcaaaagg taatatagta atattactct tattatttat ttattgtttc ttaagatttg 360
tgcagggtcaa taataaataa ctatcggtga attaaggag taccatcaaa gaaattgatt 420
tataacacga tgcgggtgga gggagctaga aagtttagtac aaatttggtt gcactaagta 480
cttcatccgt ctcaatttat gagattttgt ttgattcgag acgaaattta ataaagatga 540

```

```

tttttttaaa gttgtaatct aaaacaagtc ataaatattt gcatcactat aataatctca 600
ttaaagttaa atgaatattt ttagctaaat tattactact ccctccatgt ccatattagt 660
tgatcatctt actatatatt aactgtccac cttactcaat taataaaaata ttaattaaag 720
tttttctata ctagatataa aaatgttatt attatttttg ataaagacta gaaagagtat 780
actattttgta tatctacagt gggacgacca gttaagtata ttgtagtcaa agtaaggcaa 840
ccggatggac tgcattgcgc acaaaggctc tcaccactat aaataactcaa tattccttct 900
ctttcatttc catcaacacc ttcaccaact aacaaattaa aagaaagaaa aaaaaatctc 960
tcagtttcct cacaagctaa ttagaccctg ttccgaagaa 1000

```

<210> 5
 <211> 1125
 <212> DNA
 <213> Solanum tuberosum

```

<400> 5
atgcgacctc ttcaaccacc cccaccagct gccaaactcca cctcctccgc cgccgcatca 60
tccatgcctc ctccctcttc cgccggacaa cgcagtcgtc cccggcgctc tactgatttg 120
acccttcttc ttcttcaacg tgacgttgct cttgctgttc ctctccccct tcttccaacc 180
tccgtccctt cctcttcttc atcctcatct tcttccccgc ttcttacctt tttacatttc 240
tctgagctcg agaggggtta tcgcatcggg agtggcaccg gaggtactgt ttacaagggt 300
ctacatcgtc ccactggcag actctatgct ttgaaagtta tctatggtaa ccatgaggat 360
tctgtccgtc tccagatgtg ccgtgagatc gagattctcc gagatgtaga caaccctaac 420
gtcgttaggt gtcacgatat gtctgatcac aacggcgaaa tccaagttct tcttgagttc 480
atggataaag gctctctcga agggatccat atccctctcg aacaacctct ctccgatcta 540
actcgacagg ttctctccgg cctctactac ctccacaggc gtaagattgt tcacagagat 600
atcaaacctt ctaacctctt aatcaactcc aggcgtgagg tcaagattgc agattttggg 660
gtctccagag ttctcgcaca aactatggat ccttgcaatt cctccgtggg taccatcgct 720
tacatgagtc ccgagagaat caacacagat ctgaatcacg gacagtaga cggatatgct 780
ggggacatat ggagtcttgg ggtgagcatc ttagagttct acttgggaag gttcccttc 840
tctgtgggga gacaaggaga ctgggccagc cttatgtgct ccatttgtat gtcgcagcct 900
cctgaggcac caccactgc ttccaggag tttaggaggc tcattgcctg ctgtttgcag 960
agggatcctg ctaggcgggt gacggccgcg cagctcttgc gccatccctt catcacccag 1020
aatagcccag gcacccacac cggtcctgct actacctcat tgagtaatca ggcacatcaa 1080
ttgttacctc cactcctca tttttcttct tcttcttctt cttga 1125

```

<210> 6
 <211> 374
 <212> PRT
 <213> Solanum tuberosum

```

<400> 6
Met Arg Pro Leu Gln Pro Pro Pro Pro Ala Ala Asn Ser Thr Ser Ser
  1          5          10          15

Ala Ala Ala Ser Ser Met Pro Pro Pro Ser Ser Ala Gly Gln Arg Ser
  20          25          30

Arg Pro Arg Arg Arg Thr Asp Leu Thr Leu Pro Leu Pro Gln Arg Asp
  35          40          45

Val Ala Leu Ala Val Pro Leu Pro Leu Pro Pro Thr Ser Ala Pro Ser
  50          55          60

Ser Ser Ser Ser Ser Ser Ser Ser Pro Leu Pro Thr Pro Leu His Phe
  65          70          75          80

```

Ser Glu Leu Glu Arg Val Asn Arg Ile Gly Ser Gly Thr Gly Gly Thr
 85 90 95
 Val Tyr Lys Val Leu His Arg Pro Thr Gly Arg Leu Tyr Ala Leu Lys
 100 105 110
 Val Ile Tyr Gly Asn His Glu Asp Ser Val Arg Leu Gln Met Cys Arg
 115 120 125
 Glu Ile Glu Ile Leu Arg Asp Val Asp Asn Pro Asn Val Val Arg Cys
 130 135 140
 His Asp Met Phe Asp His Asn Gly Glu Ile Gln Val Leu Leu Glu Phe
 145 150 155 160
 Met Asp Lys Gly Ser Leu Glu Gly Ile His Ile Pro Leu Glu Gln Pro
 165 170 175
 Leu Ser Asp Leu Thr Arg Gln Val Leu Ser Gly Leu Tyr Tyr Leu His
 180 185 190
 Arg Arg Lys Ile Val His Arg Asp Ile Lys Pro Ser Asn Leu Leu Ile
 195 200 205
 Asn Ser Arg Arg Glu Val Lys Ile Ala Asp Phe Gly Val Ser Arg Val
 210 215 220
 Leu Ala Gln Thr Met Asp Pro Cys Asn Ser Ser Val Gly Thr Ile Ala
 225 230 235 240
 Tyr Met Ser Pro Glu Arg Ile Asn Thr Asp Leu Asn His Gly Gln Tyr
 245 250 255
 Asp Gly Tyr Ala Gly Asp Ile Trp Ser Leu Gly Val Ser Ile Leu Glu
 260 265 270
 Phe Tyr Leu Gly Arg Phe Pro Phe Ser Val Gly Arg Gln Gly Asp Trp
 275 280 285
 Ala Ser Leu Met Cys Ala Ile Cys Met Ser Gln Pro Pro Glu Ala Pro
 290 295 300
 Pro Thr Ala Ser Arg Glu Phe Arg Glu Phe Ile Ala Cys Cys Leu Gln
 305 310 315 320
 Arg Asp Pro Ala Arg Arg Trp Thr Ala Ala Gln Leu Leu Arg His Pro
 325 330 335
 Phe Ile Thr Gln Asn Ser Pro Gly Thr His Thr Gly Pro Ala Thr Thr
 340 345 350
 Ser Leu Ser Asn Gln Ala His Gln Leu Leu Pro Pro Pro Pro His Phe
 355 360 365
 Ser Ser Ser Ser Ser
 370

<210> 7
 <211> 1125
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 construct

<400> 7
 atgcgacctc ttcaaccacc cccaccagct gccaaactcca cctcctccgc cgccgcatca 60
 tccatgcctc ctccctcttc cgccggacaa cgcagtcgtc cccggcgctc tactgatttg 120
 acccttcctc ttcttcaacg tgacgttgct cttgctgttc ctctccccct tctccaacc 180
 tccgctcctt cctcttctc atcctcatct tctccccgc ttcctacccc ttacatttc 240
 tctgagctcg agaggggttaa tgcgacggg agtggcaccg gaggtactgt ttacaagggt 300
 ctacatcgtc ccactggcag actctatgct ttgaaagtta tctatggtaa ccatgaggat 360
 tctgtccgtc tccagatgtg ccgtgagatc gagattctcc gagatgtaga caaccctaac 420
 gtcgttaggt gtcacgatat gttcgatcac aacggcgaaa tccaagttct tcttgagttc 480
 atggataaag gctctctcga agggatccat atcctctctg aacaacctct ctccgatcta 540
 actcgacagg ttctctccgg cctctactac ctccacaggc gtaagattgt tcacagagat 600
 atcaaacctt ctaacctctt aatcaactcc aggcgtgagg tcaagattgc agattttggg 660
 gtctccagag ttctcgaca agatatggat ccttgcaatg actccgtggg taccatcgct 720
 tacatgagtc ccgagagaat caacacagat ctgaatcacg gacagtacga cggatatgct 780
 ggggacatat ggagtccttg ggtgagcatc ttagagttct acttggaag gttccccctt 840
 tctgtgggga gacaaggaga ctgggccagc cttatgtgcg ccatttgat gtcgcagcct 900
 cctgaggcac caccactgc ttccagggag tttagggagt tcattgcctg ctgtttgcag 960
 agggatcctg ctaggcgggtg gacggcgcg cagctcttgc gccatccctt catcacccag 1020
 aatagcccag gcacccacac cggtcctgct actacctcat tgagtaatca ggcacatcaa 1080
 ttgttacctc cacctcctca tttttcttct tcttcttctt cttga 1125

<210> 8
 <211> 374
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 construct

<400> 8
 Met Arg Pro Leu Gln Pro Pro Pro Pro Ala Ala Asn Ser Thr Ser Ser
 1 5 10 15
 Ala Ala Ala Ser Ser Met Pro Pro Pro Ser Ser Ala Gly Gln Arg Ser
 20 25 30
 Arg Pro Arg Arg Arg Thr Asp Leu Thr Leu Pro Leu Pro Gln Arg Asp
 35 40 45
 Val Ala Leu Ala Val Pro Leu Pro Leu Pro Pro Thr Ser Ala Pro Ser
 50 55 60
 Ser Ser Ser Ser Ser Ser Ser Ser Pro Leu Pro Thr Pro Leu His Phe
 65 70 75 80
 Ser Glu Leu Glu Arg Val Asn Arg Ile Gly Ser Gly Thr Gly Gly Thr
 85 90 95

Val	Tyr	Lys	Val	Leu	His	Arg	Pro	Thr	Gly	Arg	Leu	Tyr	Ala	Leu	Lys	100	105	110
Val	Ile	Tyr	Gly	Asn	His	Glu	Asp	Ser	Val	Arg	Leu	Gln	Met	Cys	Arg	115	120	125
Glu	Ile	Glu	Ile	Leu	Arg	Asp	Val	Asp	Asn	Pro	Asn	Val	Val	Arg	Cys	130	135	140
His	Asp	Met	Phe	Asp	His	Asn	Gly	Glu	Ile	Gln	Val	Leu	Leu	Glu	Phe	145	150	155
Met	Asp	Lys	Gly	Ser	Leu	Glu	Gly	Ile	His	Ile	Pro	Leu	Glu	Gln	Pro	165	170	175
Leu	Ser	Asp	Leu	Thr	Arg	Gln	Val	Leu	Ser	Gly	Leu	Tyr	Tyr	Leu	His	180	185	190
Arg	Arg	Lys	Ile	Val	His	Arg	Asp	Ile	Lys	Pro	Ser	Asn	Leu	Leu	Ile	195	200	205
Asn	Ser	Arg	Arg	Glu	Val	Lys	Ile	Ala	Asp	Phe	Gly	Val	Ser	Arg	Val	210	215	220
Leu	Ala	Gln	Asp	Met	Asp	Pro	Cys	Asn	Asp	Ser	Val	Gly	Thr	Ile	Ala	225	230	235
Tyr	Met	Ser	Pro	Glu	Arg	Ile	Asn	Thr	Asp	Leu	Asn	His	Gly	Gln	Tyr	245	250	255
Asp	Gly	Tyr	Ala	Gly	Asp	Ile	Trp	Ser	Leu	Gly	Val	Ser	Ile	Leu	Glu	260	265	270
Phe	Tyr	Leu	Gly	Arg	Phe	Pro	Phe	Ser	Val	Gly	Arg	Gln	Gly	Asp	Trp	275	280	285
Ala	Ser	Leu	Met	Cys	Ala	Ile	Cys	Met	Ser	Gln	Pro	Pro	Glu	Ala	Pro	290	295	300
Pro	Thr	Ala	Ser	Arg	Glu	Phe	Arg	Glu	Phe	Ile	Ala	Cys	Cys	Leu	Gln	305	310	315
Arg	Asp	Pro	Ala	Arg	Arg	Trp	Thr	Ala	Ala	Gln	Leu	Leu	Arg	His	Pro	325	330	335
Phe	Ile	Thr	Gln	Asn	Ser	Pro	Gly	Thr	His	Thr	Gly	Pro	Ala	Thr	Thr	340	345	350
Ser	Leu	Ser	Asn	Gln	Ala	His	Gln	Leu	Leu	Pro	Pro	Pro	Pro	His	Phe	355	360	365
Ser	Ser	Ser	Ser	Ser	Ser											370		

<210> 9
 <211> 20
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 primer

<400> 9
 aggagattgt tcgccccata 20

<210> 10
 <211> 20
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 primer

<400> 10
 tctccatgag tccttacatg 20

<210> 11
 <211> 22
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 primer

<400> 11
 catcgattgt tttgtacatc tg 22

<210> 12
 <211> 26
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 primer

<400> 12
 aataatgata caaaaaaaaa ttaagg 26

<210> 13
 <211> 22
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 primer

 <400> 13
 tatcaattca ccaaggaaca ct 22

 <210> 14
 <211> 27
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic
 primer

 <400> 14
 gaagtaatta aatttaaata ttatcaa 27

 <210> 15
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic
 primer

 <400> 15
 ttgtctgctg ctgcttgtgg 20

 <210> 16
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic
 primer

 <400> 16
 tctccatgag tccttacatg 20

 <210> 17
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic
 primer

 <400> 17
 aggacattgt tcgacctgtt 20

<210> 18
 <211> 20
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 primer

<400> 18
 tctccatgag tccttacatg 20

<210> 19
 <211> 24
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 primer

<400> 19
 catcccttaa aattataagt attc 24

<210> 20
 <211> 25
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 primer

<400> 20
 aataatgata caaaataaat taagg 25

<210> 21
 <211> 2231
 <212> DNA
 <213> Solanum tuberosum

<400> 21
 atggccctag ctatcccctt taacaatgaa gaggagattg ttcgccctgt tgccaatttc 60
 tctccaagtc tttgggggtga tcgtttccat tcattctctc tcgacaatca ggtaattact 120
 taattaatta ctaattaaat ccttctctat cgcttatatt tgggtaatta ctactaatcc 180
 caatcatgaa cattttacag gttgctgaaa agtatgctca agagattgaa actttgaagg 240
 aacaacaag gagtttggtg tctgctgctg cttgtggaat aacattggct gagaaattga 300
 atctgataga cattgttgag cgccttggtc tagcttatca ttttgagaaa caaatagatg 360
 atatgttggg tcaaatttac aaagcagatc ccaactttga cgctcatgat ttaaactt 420
 tatcccttca atttcgaata ttaagacaac atgggttaca tatctcccaa agtaggtcca 480
 tcatttaaaa caattcacca aaataatacg tttttttctg catgaaaact aattatcttt 540
 tgctttttatt cgatcatgat ccagaatttt tcagcagatt ccaagatgcg aatggcaagt 600
 tcaaggaatg tcttagcaac gacatcaggg gtctattgaa cttatacgaa gcttcacatg 660

taaggactca	tggaagaagat	atthtagaag	aggcacttgt	tttctccact	gctcatcttg	720
agtctgcagc	tccacatttg	gagtcacctc	tgagtaagca	agtgactcat	gcccttgagc	780
agtctctcca	taagagcatt	ccaagagtcg	agacgcgcta	cttcatctcc	atctacgaag	840
aggaggaatt	taagaatgat	gtgttgcttc	gatttgccaa	attggattac	aacttactcc	900
agatgttgca	caaacacgaa	cttagtgaa	tatcaaggta	tacagatgtg	ttaagttgaa	960
ttaaaaatac	tagtataaat	tatttggtga	tagtaatttc	taagattggg	acttattttg	1020
taggtggtgg	aaagatttgg	atthtgtgac	aacgcttcca	tatgctaggg	atagagcagt	1080
ggaatgttac	ttttggacga	tggtgagtgta	tgctgaacct	caatactctc	aggctcgtgt	1140
catccttgca	aagactatag	caatgatttc	gatagtagat	gacacattcg	atgcttatgg	1200
aatagtaaaa	gaacttgagg	tctacaccga	tgccatacaa	aggatatggac	ttgcctctcc	1260
aacagttcat	ggatttatta	gacgggaaac	ttactaaatc	tctttctggt	ttattagggtg	1320
ggatattagt	caaattgatc	gactcccaga	atacatgaaa	gtagttttta	aggctctttt	1380
ggatctctat	gaagattatg	aaaaggagtt	gtcaaaggat	ggcagatccg	atgttggtcca	1440
ctacgcaaaa	gaaagagtag	gactcactga	tttctattta	aaaacacttg	tattttacct	1500
atactatttc	tttattatac	aattagatct	gttatgggag	tattgatggg	tgaatgtctt	1560
gtggtttctg	ttaaacagat	gaaggagatt	gtgagaaact	atthtgtaga	agcaaagtgg	1620
ttcatttgagg	gatatatgcc	gcctgtttct	gagtatctta	gcaatgcatt	agctaccagc	1680
acatactact	tgctaactac	aacatcctat	ttgggagtgta	agtcagcaac	aaaggaagat	1740
tttgaatggg	tggtctacga	ccctaaaatt	cttgaagcca	atgtgacatt	atgccgagtt	1800
gttgatgaca	tagcaacgta	tgaggtaatt	agcatcgcat	tacactacat	aatcatcttt	1860
ataatthtaga	gttacagtaa	tttaatacaa	attgattttca	catacttata	aatgaattat	1920
aattgccatt	ccaggttgag	aagggtaggg	gccaaatcgc	aacaggaatt	gagtgttata	1980
tgagggatta	tgacgtatca	acagaagtag	caatggaaaa	attccaagag	atggctgaga	2040
tagcatggaa	ggatgtaaat	gaaggaaattc	ttcgaccaa	acctgtctct	acagaaattc	2100
ttactcgcat	tctcaatctt	gctcgtatta	tagatgtcac	ttacaagcac	aatcaagatg	2160
gatacactca	tcccgaaaaa	gttctaaaaa	ctcacatcat	tgctttactg	gtggactcca	2220
ttgagatcta	a					2231

<210> 22

<211> 1337

<212> DNA

<213> Solanum tuberosum

<400> 22

gtccgcctt	actattccca	tccgatctct	tgggaagcgg	gggagaaaa	tttataatag	60
tgcaactcatg	ctataattac	atactaagat	tttatgtaat	gctatatttt	ttcaagttga	120
agacggaaac	aatagcattg	gatcaagaca	gacgccattg	aaggaagaaa	aaacctaaaa	180
aaataaacia	aaggagagac	actttcttgg	tcccttcgag	gccatatatc	ccattaatat	240
aaaaatataa	aacaaaaaaa	aagacagacg	gtcgcccaag	gaaagaaggc	ggacgtcact	300
aacggctaac	cctaactaca	aataatgtaa	ttttccaaaa	acggaactat	aaggaataaa	360
aaacatgaag	attattgagt	attattaatt	tttaaaagac	agacgccact	cgaggaaata	420
aggaatcaca	aggagttaa	aaagaaatta	aaggcacgtt	acagtatcat	ataatataaa	480
tttaagtttg	gttgcatgta	agttatatag	tttttaaaaa	aaaataaaat	tgtccaacaa	540
tacttggtcca	atthtagaaa	tctaaaagat	aatttattat	tttgtgtttg	ttttacctca	600
acatctaata	catttctcaa	attattaaat	ttaatatatt	caaaaggtaa	tatagtaata	660
ttactcttat	tatttatthta	ttgtttctta	agatttgtgc	aggatcaata	taaataacta	720
tcgttgaatt	aaggagtagt	catcaaagaa	attgatttat	aacacgatgc	gggtggaggg	780
agctagaaa	ttagtacaaa	tttggttgca	ctaagtaact	catccgtctc	aatttatgag	840
atthtgtttg	attcgagacg	aaatttaata	aagatgattt	ttttaaagtt	gtaattctaaa	900
acaagtcata	aatatttgca	tactataaat	aatctcatta	aatgtaaatg	aatattttta	960
gctaaattat	tactactccc	tccatgtcca	tattagttga	tcatcttact	atatattaac	1020
tggtccacct	actcaattaa	taaaatatta	attaaagttt	ttctatacta	gatataaaaa	1080
tggtatttatt	atthtttgata	aagactagaa	agagtatact	atthtgatat	ctacagtggg	1140
acgaccagtt	aagtatatgt	tagtcaaagt	aaggcaaccg	gatggactgc	atgcagaca	1200
aaggctctca	ccactataaa	tactcaatat	tccttctctt	tcatttccat	caacaccttc	1260
accaactaac	aaattaaaag	aaagaaaaaa	aaatctctca	gtttctctac	aagctaatta	1320
gacccgtttc	cgaagaa					1337

<210> 23
 <211> 50
 <212> DNA
 <213> Solanum tuberosum

<400> 23
 gtccgcctt actattccca tccgatctct tgggaagcgg gggagaaaat 50

<210> 24
 <211> 1288
 <212> DNA
 <213> Solanum tuberosum

<400> 24
 ttttataata gtgcactcat gctataatta catactaaga ttttatgtaa tgctatattt 60
 tttcaagttg aagacggaaa caatagcatt ggatcaagac agacgccatt gaaggaagaa 120
 aaaacctaata aaaataaaca aaaggagaga cactttcttg gtcccttcga ggccatatat 180
 cccattaata taaaaatata aaacaaaaaa aaagacagac ggtcgcccaa ggaaagaagg 240
 cggacgtcac taacggctaa ccctaactac aaataatgta attttccaaa aacggaacta 300
 taaggaataa aaaacatgaa gattattgag tattattaat ttttaaaaga cagacgccac 360
 tcgaggaaat aaggaatcac aaggagttaa gaaagaaatt aaaggcacgt tacagtatca 420
 tataatataa atttaagttt ggttgcatg aagttatata gtttttaaaa aaaaataaaa 480
 ttgtccaaca atacttgctc aatttagaaa atctaaaaga taatttatta ttttgtgttt 540
 gttttacctc aacatctaata acatttctca aattattaaa tttaatatat tcaaaaggta 600
 atatagtaat attactctta ttatttattt attgtttctt aagatttgtg caggtaata 660
 ataaataact atcggtgaat taaggagta ccatcaaaga aattgattta taacacgatg 720
 cgggtggagg gagctagaaa gttagtacaa atttggttgc actaagtact tcatccgtct 780
 caatttatga gattttgttt gattcgagac gaaatttaat aaagatgatt tttttaagt 840
 tgtaatctaa aacaagtcac aaatatttgc atcactataa taatctcatt aaatgtaaat 900
 gaatattttt agctaaatta ttactactcc ctccatgtcc atattagttg atcatcttac 960
 tatatattaa ctgtccacct tactcaatta ataaaatatt aattaaagtt tttctatact 1020
 agatataaaa atgttattat tatttttgat aaagactaga aagagtatac tatttgata 1080
 tctacagtgg gacgaccagt taagtatatt gtagtcaaag taaggcaacc ggatggactg 1140
 catgcagcac aaaggctctc accactataa atactcaata ttccttctct ttcatttcca 1200
 tcaacacctt caccaactaa caaattaaaa gaaagaaaaa aaaatctctc agtttctctca 1260
 caagctaatt agaccggtt ccgaagaa 1288

<210> 25
 <211> 30
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic primer

<400> 25
 cggaattctt gtaatcctta tttaggatta 30

<210> 26
 <211> 30
 <212> DNA
 <213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
primer

<400> 26
cggaattcgt ccgcccttac tattcccatc 30

<210> 27
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
primer

<400> 27
cggaattcctt tataatagtg cactcatgct 30

<210> 28
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
primer

<400> 28
cggaattcgc tatatTTTTT caagttgaag 30

<210> 29
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
primer

<400> 29
cggaattcga cgccattgaa ggaagaaaaa 30

<210> 30
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
primer

<400> 30
 cggaattcac tttcttggtc ccttcgaggc 30

<210> 31
 <211> 30
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic primer

<400> 31
 cggaattcaa caaaaaaaaaa gacagacggt 30

<210> 32
 <211> 30
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic primer

<400> 32
 cggaattcgt tatatagttt ttaaaaaaaaa 30

<210> 33
 <211> 30
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic primer

<400> 33
 cggaattcga ttataaacac gatgcgggtg 30

<210> 34
 <211> 30
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic primer

<400> 34
 cggaattctt actatatatt aactgtccac 30

<210> 35
 <211> 30
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 primer

<400> 35
 ccatcgattc ctcttcattg ttaaaggga

30

<210> 36
 <211> 28
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 primer

<400> 36
 ttgggccat gcgacctctt caaccacc

28

<210> 37
 <211> 27
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 primer

<400> 37
 gactagtaca aaagagtgtg gaattac

27

<210> 38
 <211> 26
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 primer

<400> 38
 gtcgacgaca cagccacgta cgaggt

26

<210> 39
 <211> 26
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 primer

<400> 39
 atcgatagac tttctccgga tgagtg

26

<210> 40
 <211> 5236
 <212> DNA
 <213> Solanum tuberosum

<220>
 <221> CDS
 <222> (2649)..(2759)

<220>
 <221> CDS
 <222> (2849)..(3119)

<220>
 <221> CDS
 <222> (3213)..(3585)

<220>
 <221> CDS
 <222> (3672)..(3890)

<220>
 <221> CDS
 <222> (3966)..(4104)

<220>
 <221> CDS
 <222> (4227)..(4472)

<220>
 <221> CDS
 <222> (4583)..(4876)

<220>
 <221> modified_base
 <222> (246)
 <223> a, c, g, t, unknown or other

<220>
 <221> modified_base
 <222> (278)
 <223> a, c, g, t, unknown or other

<400> 40
 ctcttctgtt gatgtgctat agtcttttat atagcgctct attcatgttg taatttggcc 60
 tctacttttaa tttttttcaa cctaaaccaa cgtacaataa tgtgtaatga tactaatttg 120
 actcacataa tagcatggtg ctagaagagt cacttgaaag agtatactga agagtattaa 180

aaatataatt ctaaagaatt tcgaagattc aattataatt gatcaagaag gtgataagag 240
 ccttcnacaa caacgtaaag tttgggtagc ctctatanat gactatgaaa atagccaaaa 300
 aaaaattcaa attcgaattc ttgtaatcct tatttaggat tattgcgacc atcacttggtg 360
 ggtgccttac ttgactaaat atttgattaa acattaattt ttggtcagtg gatatacatg 420
 ccactcaatt ttaaataaat tagtgatccc ttacgatctt aaaaaaattg tatttttggtg 480
 tgtaatgtca actttgggtc aaatgtctaa tataataagt attaatcca acagtattag 540
 aattttattt ctaagatcac tcttacgggc ttaccactga aagattaaaa ttctaacca 600
 gaatttgaac tttaaatagt acttatgaat tttacttgcc gtttgaattt tatgtacatg 660
 cttagaataa ttaggtcctc atgtagtcaa ctttaagaaa attacaatgt tacgttctaa 720
 caagaacaaa ttgactcta gatttttaaat tttttttttt taaaaaaaaa ctaaatactc 780
 atccgattca atttgtttga aactatgttc caattattaa tccgtttcaa aaacaatggt 840
 acattcagat atttaaaatc aattaactta aattttctcat catcagtaag aagttttaat 900
 aatcacatga aggaaagcct gtttggagaa agttatgctt aaaatattgc atatatctct 960
 tccattgaat tagttacatc tggatttgca taaaatcaac atttagtaaa atacgatggc 1020
 ttagatgatt gaactttgaa caggaaaaat aagcgtgcaa ataagccatc aatcttgaac 1080
 tttagaaata tatatatata attcaataag ttactttatt ggaatagcta tagtgacggc 1140
 ggatttagaa ttttcattaa agggactcta aaaaaatata gtgcctaaga tttgaacttg 1200
 aaactcaaga tgccactaaa caacctctaa tcttacattc agaagggtca aaatcaatat 1260
 atatagacat aattttttta atttttttta acctccctcg actacctcta ggtccgccct 1320
 tactattccc atccgatctc ttgggaagcg ggggagaaaa ttttataata gtgcactcat 1380
 gctataatta catactaaga ttttatgtaa tgctatattt tttcaagttg aagacggaaa 1440
 caatagcatt ggatcaagac agacgccatt gaaggaagaa aaaacctaaa aaaataaaca 1500
 aaaggagaga cactttcttg gtcccttcga ggccatatat cccattaata taaaaatata 1560
 aaacaaaaaa aaagacagac ggtcgcccaa ggaaagaagg cggacgtcac taacggctaa 1620
 ccctaactac aaataatgta attttccaaa aacggaacta taaggaataa aaaacatgaa 1680
 gattattgag tattattaat ttttaaaaga cagacgccac tcgaggaaat aaggaatcac 1740
 aaggagtaaa gaaagaaatt aaaggcacgt tacagtatca tataatataa atttaagttt 1800
 ggttgcattg aagttatata gtttttaaaa aaaaataaaa ttgtccaaca atacttggtc 1860
 aatttagaaa atctaaaaga taatttatta ttttgtgttt gttttacctc aacatcta 1920

acattttctca aattattataa tttatataat tcaaaaggta atatagtaat attactctta 1980
 ttattttattt attgtttctt aagatttgtg cagggtcaata ataaataact atcggtgaat 2040
 taaggaggta ccatcaaaga aattgattta taacacgatg cgggtggagg gagctagaaa 2100
 gttagtacaa atttgggtgc actaagtact tcatccgtct caatttatga gattttgttt 2160
 gattcgagac gaaatttaat aaagatgatt tttttaaagt tgtaatctaa aacaagtcac 2220
 aaatatttgc atcactataa taatctcatt aaatgtaaat gaatatTTTT agctaaatta 2280
 ttactactcc ctccatgtcc atattagtgt atcatcttac tatatatata ctgtccacct 2340
 tactcaatta ataaaatatt aattaaagtt tttctatact agatataaaa atgttattat 2400
 tatttttgat aaagactaga aagagtatac tatttgtata tctacagtgg gacgaccagt 2460
 taagtatatt gtagtcaaag taaggcaacc ggatggactg catgcagcac aaaggctctc 2520
 accactataa atactcaata ttccttctct ttcatttcca tcaacacctt caccaactaa 2580
 caaattaaaa gaaagaaaaa aaaatctctc agtttctca caagctaatt agaccggtt 2640
 ccgaagaa atg gcc cta gct atc ccc ttt aac aat gaa gag gag att gtt 2690
 Met Ala Leu Ala Ile Pro Phe Asn Asn Glu Glu Glu Ile Val
 1 5 10
 cgc cct gtt gcc aat ttc tct cca agt ctt tgg ggt gat cgt ttc cat 2738
 Arg Pro Val Ala Asn Phe Ser Pro Ser Leu Trp Gly Asp Arg Phe His
 15 20 25 30
 tca ttc tct ctc gac aat cag gtaattactt aattaattac taattaaatc 2789
 Ser Phe Ser Leu Asp Asn Gln
 35
 cttctctatc gcttatattt ggtaattac tactaatccc aatcatgaac attttacag 2848
 gtt gct gaa aag tat gct caa gag att gaa act ttg aag gaa caa aca 2896
 Val Ala Glu Lys Tyr Ala Gln Glu Ile Glu Thr Leu Lys Glu Gln Thr
 40 45 50
 agg agt ttg ttg tct gct gct gct tgt gga ata aca ttg gct gag aaa 2944
 Arg Ser Leu Leu Ser Ala Ala Ala Cys Gly Ile Thr Leu Ala Glu Lys
 55 60 65
 ttg aat ctg ata gac att gtt gag cgc ctt ggc tta gct tat cat ttt 2992
 Leu Asn Leu Ile Asp Ile Val Glu Arg Leu Gly Leu Ala Tyr His Phe
 70 75 80 85
 gag aaa caa ata gat gat atg ttg gat caa att tac aaa gca gat ccc 3040
 Glu Lys Gln Ile Asp Asp Met Leu Asp Gln Ile Tyr Lys Ala Asp Pro
 90 95 100
 aac ttt gac gct cat gat tta aac act tta tcc ctt caa ttt cga ata 3088
 Asn Phe Asp Ala His Asp Leu Asn Thr Leu Ser Leu Gln Phe Arg Ile
 105 110 115

tta aga caa cat ggt tac aat atc tcc caa a gtaggtccat catttaaaac 3139
 Leu Arg Gln His Gly Tyr Asn Ile Ser Gln
 120 125

aattcaccaa aataatacgt ttttttctgc atgaaaacta attatctttt gctttttattc 3199

gatcatgatac cag aa ttt ttc agc aga ttc caa gat gcg aat ggc aag ttc 3250
 Lys Phe Phe Ser Arg Phe Gln Asp Ala Asn Gly Lys Phe
 130 135 140

aag gaa tgt ctt agc aac gac atc agg ggt cta ttg aac tta tac gaa 3298
 Lys Glu Cys Leu Ser Asn Asp Ile Arg Gly Leu Leu Asn Leu Tyr Glu
 145 150 155

gct tca cat gta agg act cat gga gaa gat att tta gaa gag gca ctt 3346
 Ala Ser His Val Arg Thr His Gly Glu Asp Ile Leu Glu Glu Ala Leu
 160 165 170

gtt ttc tcc act gct cat ctt gag tct gca gct cca cat ttg gag tca 3394
 Val Phe Ser Thr Ala His Leu Glu Ser Ala Ala Pro His Leu Glu Ser
 175 180 185

cct ctg agt aag caa gtg act cat gcc ctt gag cag tct ctc cat aag 3442
 Pro Leu Ser Lys Gln Val Thr His Ala Leu Glu Gln Ser Leu His Lys
 190 195 200

agc att cca aga gtc gag acg cgc tac ttc atc tcc atc tac gaa gag 3490
 Ser Ile Pro Arg Val Glu Thr Arg Tyr Phe Ile Ser Ile Tyr Glu Glu
 205 210 215 220

gag gaa ttt aag aat gat gtg ttg ctt cga ttt gcc aaa ttg gat tac 3538
 Glu Glu Phe Lys Asn Asp Val Leu Leu Arg Phe Ala Lys Leu Asp Tyr
 225 230 235

aac tta ctc cag atg ttg cac aaa cac gaa ctt agt gaa gta tca ag 3585
 Asn Leu Leu Gln Met Leu His Lys His Glu Leu Ser Glu Val Ser Arg
 240 245 250

gtatacagat gtgttaagtt gaattaaaaa tactagtata aattatttgt tgatagtaat 3645

ttctaagatt ggtacttatt ttgtag g tgg tgg aaa gat ttg gat ttt gtg 3696
 Trp Trp Lys Asp Leu Asp Phe Val
 255 260

aca acg ctt cca tat gct agg gat aga gca gtg gaa tgt tac ttt tgg 3744
 Thr Thr Leu Pro Tyr Ala Arg Asp Arg Ala Val Glu Cys Tyr Phe Trp
 265 270 275

acg atg gga gtg tat gct gaa cct caa tac tct cag gct cgt gtc atc 3792
 Thr Met Gly Val Tyr Ala Glu Pro Gln Tyr Ser Gln Ala Arg Val Ile
 280 285 290

ctt gca aag act ata gca atg att tcg ata gta gat gac aca ttc gat 3840
 Leu Ala Lys Thr Ile Ala Met Ile Ser Ile Val Asp Asp Thr Phe Asp
 295 300 305

gct tat gga ata gta aaa gaa ctt gag gtc tac acc gat gcc ata caa 3888
 Ala Tyr Gly Ile Val Lys Glu Leu Glu Val Tyr Thr Asp Ala Ile Gln
 310 315 320

ag gtatggactt gcctctccaa cagttcatgg atttattaga cgggaaactt 3940
 Arg
 325

actaaatctc tttctgtttt attag g tgg gat att agt caa att gat cga ctc 3993
 Trp Asp Ile Ser Gln Ile Asp Arg Leu
 330

cca gaa tac atg aaa gtt agt ttt aag gct ctt ttg gat ctc tat gaa 4041
 Pro Glu Tyr Met Lys Val Ser Phe Lys Ala Leu Leu Asp Leu Tyr Glu
 335 340 345 350

gat tat gaa aag gag ttg tca aag gat ggc aga tcc gat gtt gtc cac 4089
 Asp Tyr Glu Lys Glu Leu Ser Lys Asp Gly Arg Ser Asp Val Val His
 355 360 365

tac gca aaa gaa aga gtaggactca ctgatttcta tttaaaaaca cttgtattta 4144
 Tyr Ala Lys Glu Arg
 370

ccttatacta tttcttttatt atacaattag atctgttatg ggagtattga tgggtgaatg 4204

tcttggtggtt tctgttaaag ag atg aag gag att gtg aga aac tat ttt gta 4256
 Met Lys Glu Ile Val Arg Asn Tyr Phe Val
 375 380

gaa gca aag tgg ttc att gag gga tat atg ccg cct gtt tct gag tat 4304
 Glu Ala Lys Trp Phe Ile Glu Gly Tyr Met Pro Pro Val Ser Glu Tyr
 385 390 395

ctt agc aat gca tta gct acc agc aca tat tac ttg cta act aca aca 4352
 Leu Ser Asn Ala Leu Ala Thr Ser Thr Tyr Tyr Leu Leu Thr Thr Thr
 400 405 410

tcc tat ttg gga gtg aag tca gca aca aag gaa gat ttt gaa tgg ttg 4400
 Ser Tyr Leu Gly Val Lys Ser Ala Thr Lys Glu Asp Phe Glu Trp Leu
 415 420 425

gct acg aac cct aaa att ctt gaa gcc aat gtg aca tta tgc cga gtt 4448
 Ala Thr Asn Pro Lys Ile Leu Glu Ala Asn Val Thr Leu Cys Arg Val
 430 435 440 445

gtt gat gac ata gca acg tat gag gtaattagca tcgcattaca ctacataaat 4502
 Val Asp Asp Ile Ala Thr Tyr Glu
 450

catcttataa tttagagtta cagtaattta atacaaattg atttcacata cttataaatg 4562

aattataatt gccattccag gtt gag aag ggt agg ggc caa atc gca aca gga 4615
 Val Glu Lys Gly Arg Gly Gln Ile Ala Thr Gly
 455 460

att gag tgt tat atg agg gat tat gac gta tca aca gaa gta gca atg 4663
 Ile Glu Cys Tyr Met Arg Asp Tyr Asp Val Ser Thr Glu Val Ala Met
 465 470 475 480

 gaa aaa ttc caa gag atg gct gag ata gca tgg aag gat gta aat gaa 4711
 Glu Lys Phe Gln Glu Met Ala Glu Ile Ala Trp Lys Asp Val Asn Glu
 485 490 495

 gga att ctt cga cca aca cct gtc tct aca gaa att ctt act cgc att 4759
 Gly Ile Leu Arg Pro Thr Pro Val Ser Thr Glu Ile Leu Thr Arg Ile
 500 505 510

 ctc aat ctt gct cgt att ata gat gtc act tac aag cac aat caa gat 4807
 Leu Asn Leu Ala Arg Ile Ile Asp Val Thr Tyr Lys His Asn Gln Asp
 515 520 525

 gga tac act cat ccc gaa aaa gtt cta aaa cct cac atc att gct tta 4855
 Gly Tyr Thr His Pro Glu Lys Val Leu Lys Pro His Ile Ile Ala Leu
 530 535 540

 ctg gtg gac tcc att gag atc taaaaattta gttaaatttta attttttaaaa 4906
 Leu Val Asp Ser Ile Glu Ile
 545 550

 tgttacgtaa aaaataataa accgtaaaaa taatgaagat taaggcgaac gaaccacgtg 4966
 aggcggaaaac gttgagaatg gatgatggaa aatagatgaa tatattgtta tgcatagaagg 5026
 gtgtttcaca ctcttttgat tttgggaatg catggacatc cgcatagttgt cgactacacc 5086
 tcgaccaatg ttgcgcaagc cacggccgat gcgggcaggc cacggatgac cgttgtgtgtc 5146
 agtccaaggg cgatgcggcc aggccacggc cgatgtcgac tgaccgttgt gtgcagtcca 5206
 agggcgatgc gggcaggcca cgtccgacgt 5236

<210> 41
 <211> 551
 <212> PRT
 <213> Solanum tuberosum

<400> 41
 Met Ala Leu Ala Ile Pro Phe Asn Asn Glu Glu Glu Ile Val Arg Pro
 1 5 10 15

 Val Ala Asn Phe Ser Pro Ser Leu Trp Gly Asp Arg Phe His Ser Phe
 20 25 30

 Ser Leu Asp Asn Gln Val Ala Glu Lys Tyr Ala Gln Glu Ile Glu Thr
 35 40 45

 Leu Lys Glu Gln Thr Arg Ser Leu Leu Ser Ala Ala Ala Cys Gly Ile
 50 55 60

 Thr Leu Ala Glu Lys Leu Asn Leu Ile Asp Ile Val Glu Arg Leu Gly
 65 70 75 80

Leu	Ala	Tyr	His	Phe	Glu	Lys	Gln	Ile	Asp	Asp	Met	Leu	Asp	Gln	Ile	85	90	95
Tyr	Lys	Ala	Asp	Pro	Asn	Phe	Asp	Ala	His	Asp	Leu	Asn	Thr	Leu	Ser	100	105	110
Leu	Gln	Phe	Arg	Ile	Leu	Arg	Gln	His	Gly	Tyr	Asn	Ile	Ser	Gln	Lys	115	120	125
Phe	Phe	Ser	Arg	Phe	Gln	Asp	Ala	Asn	Gly	Lys	Phe	Lys	Glu	Cys	Leu	130	135	140
Ser	Asn	Asp	Ile	Arg	Gly	Leu	Leu	Asn	Leu	Tyr	Glu	Ala	Ser	His	Val	145	150	155
Arg	Thr	His	Gly	Glu	Asp	Ile	Leu	Glu	Glu	Ala	Leu	Val	Phe	Ser	Thr	165	170	175
Ala	His	Leu	Glu	Ser	Ala	Ala	Pro	His	Leu	Glu	Ser	Pro	Leu	Ser	Lys	180	185	190
Gln	Val	Thr	His	Ala	Leu	Glu	Gln	Ser	Leu	His	Lys	Ser	Ile	Pro	Arg	195	200	205
Val	Glu	Thr	Arg	Tyr	Phe	Ile	Ser	Ile	Tyr	Glu	Glu	Glu	Glu	Phe	Lys	210	215	220
Asn	Asp	Val	Leu	Leu	Arg	Phe	Ala	Lys	Leu	Asp	Tyr	Asn	Leu	Leu	Gln	225	230	235
Met	Leu	His	Lys	His	Glu	Leu	Ser	Glu	Val	Ser	Arg	Trp	Trp	Lys	Asp	245	250	255
Leu	Asp	Phe	Val	Thr	Thr	Leu	Pro	Tyr	Ala	Arg	Asp	Arg	Ala	Val	Glu	260	265	270
Cys	Tyr	Phe	Trp	Thr	Met	Gly	Val	Tyr	Ala	Glu	Pro	Gln	Tyr	Ser	Gln	275	280	285
Ala	Arg	Val	Ile	Leu	Ala	Lys	Thr	Ile	Ala	Met	Ile	Ser	Ile	Val	Asp	290	295	300
Asp	Thr	Phe	Asp	Ala	Tyr	Gly	Ile	Val	Lys	Glu	Leu	Glu	Val	Tyr	Thr	305	310	315
Asp	Ala	Ile	Gln	Arg	Trp	Asp	Ile	Ser	Gln	Ile	Asp	Arg	Leu	Pro	Glu	325	330	335
Tyr	Met	Lys	Val	Ser	Phe	Lys	Ala	Leu	Leu	Asp	Leu	Tyr	Glu	Asp	Tyr	340	345	350
Glu	Lys	Glu	Leu	Ser	Lys	Asp	Gly	Arg	Ser	Asp	Val	Val	His	Tyr	Ala	355	360	365
Lys	Glu	Arg	Met	Lys	Glu	Ile	Val	Arg	Asn	Tyr	Phe	Val	Glu	Ala	Lys	370	375	380

Trp Phe Ile Glu Gly Tyr Met Pro Pro Val Ser Glu Tyr Leu Ser Asn
 385 390 395 400
 Ala Leu Ala Thr Ser Thr Tyr Tyr Leu Leu Thr Thr Thr Ser Tyr Leu
 405 410 415
 Gly Val Lys Ser Ala Thr Lys Glu Asp Phe Glu Trp Leu Ala Thr Asn
 420 425 430
 Pro Lys Ile Leu Glu Ala Asn Val Thr Leu Cys Arg Val Val Asp Asp
 435 440 445
 Ile Ala Thr Tyr Glu Val Glu Lys Gly Arg Gly Gln Ile Ala Thr Gly
 450 455 460
 Ile Glu Cys Tyr Met Arg Asp Tyr Asp Val Ser Thr Glu Val Ala Met
 465 470 475 480
 Glu Lys Phe Gln Glu Met Ala Glu Ile Ala Trp Lys Asp Val Asn Glu
 485 490 495
 Gly Ile Leu Arg Pro Thr Pro Val Ser Thr Glu Ile Leu Thr Arg Ile
 500 505 510
 Leu Asn Leu Ala Arg Ile Ile Asp Val Thr Tyr Lys His Asn Gln Asp
 515 520 525
 Gly Tyr Thr His Pro Glu Lys Val Leu Lys Pro His Ile Ile Ala Leu
 530 535 540
 Leu Val Asp Ser Ile Glu Ile
 545 550

<210> 42
 <211> 40
 <212> DNA
 <213> Solanum tuberosum

<220>
 <221> CDS
 <222> (5)..(40)

<400> 42
 agaa atg gcc cta gct atc ccc ttt aac aat gcc atg gaa 40
 Met Ala Leu Ala Ile Pro Phe Asn Asn Ala Met Glu
 1 5 10

<210> 43
 <211> 12
 <212> PRT
 <213> Solanum tuberosum

<400> 43
 Met Ala Leu Ala Ile Pro Phe Asn Asn Ala Met Glu
 1 5 10

<210> 44
 <211> 61
 <212> DNA
 <213> Solanum tuberosum

<220>
 <221> CDS
 <222> (5)..(61)

<400> 44
 agaa atg gcc cta gct atc ccc ttt aac aat gaa gga tcc ccg ggt ggt 49
 Met Ala Leu Ala Ile Pro Phe Asn Asn Glu Gly Ser Pro Gly Gly
 1 5 10 15
 cag tcc ctt atg 61
 Gln Ser Leu Met

<210> 45
 <211> 19
 <212> PRT
 <213> Solanum tuberosum

<400> 45
 Met Ala Leu Ala Ile Pro Phe Asn Asn Glu Gly Ser Pro Gly Gly Gln
 1 5 10 15
 Ser Leu Met

<210> 46
 <211> 64
 <212> DNA
 <213> Solanum tuberosum

<220>
 <221> CDS
 <222> (5)..(64)

<400> 46
 agaa atg gcc cta gct atc ccc ttt aac aat gaa gag gaa tcg atg ggt 49
 Met Ala Leu Ala Ile Pro Phe Asn Asn Glu Glu Glu Ser Met Gly
 1 5 10 15
 cag tcc ctt atg tta 64
 Gln Ser Leu Met Leu
 20

<210> 47
 <211> 20
 <212> PRT
 <213> Solanum tuberosum

25

<400> 47

Met Ala Leu Ala Ile Pro Phe Asn Asn Glu Glu Glu Ser Met Gly Gln
1 5 10 15

Ser Leu Met Leu
20